



## **RHIC Spin Retreat**

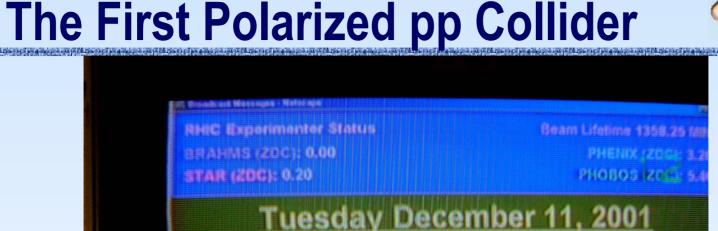
RHIC Retreat March 5-7, 2002

# Naohito Saito RIKEN / RIKEN BNL Research Center



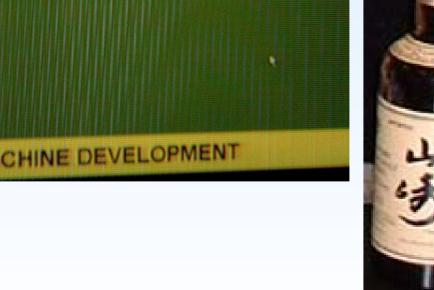






2230: Significant polarization has been





aito (RIKEN/ RBRC)

# RHIC Spin Excitement 12/11/01 **Tuesday December 11, 2001** 2230: Significant polarization has been measured in RHIC, at 100 GeV MACHINE DEVELOPMENT



#### **RHIC Spin Retreat**



Questions on Run-2 Performance and Run-3 Plan by Gerry are well covered by previous speakers

#### In Addition, I would add:

- Interfacing Issues:
  - **Experiment-Experiment Communication**
  - **Experiment-MCR Communication**
- Request / Proposal for Better Future







### **Exp-Exp and Exp-MCR Communications**

- Usefulness of "Gerry's Meeting"
  - Timely discussion for re-focusing efforts towards most optimal working plan
    - After Gerry's Meeting on December 28, 2001, where we concluded Lumi is important so far rather than Polarization, we had a huge jump in Luminosity within a few hours
  - Coherent view among all experiments and all machinists
    - Eliminates "rumor" type of mis-information
    - Minimizes Unnecessary conflicts among experiments
  - As a result, we were able to extract maximal success out of limited available time







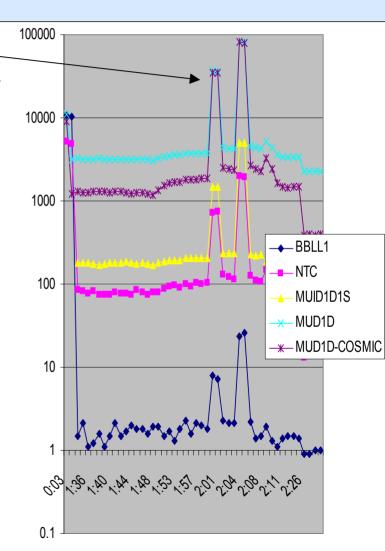
#### **Exp-MCR Communication**



#### Better communication with MCR is desirable

- **Polarization Measurement** 
  - E.g. A big change observed in PHENIX **MuID Trigger Performance**
- **Steering** 
  - Always fixed order??
- Cog / Re-cog / Spin Flip
  - Crucial for Spin Asymmetry **Measurements**
  - Visualize on some RHIC Monitor?
- Scraping
  - PHENIX MulD
- Dump
  - Decision and Preparation takes long
- **Spin Pattern Change** 
  - # of Options should be minimized to avoid confusion
- **Experimental Magnet Control**





#### Vertex Distribution and Bunch Profile. wcmProfile.vi File Edit Operate Windows Help **BBC ONLINE MONITOR** plot Spacing # plots Run 40129 : Event 2145577 ,accumulated: 3831 YELLOW **≜**|56| .000 ∄1.00 2362-**BBC ZVertex** Nent = 30552 Mean = -3.021BBC ZVertex 2000-450 triagered by BBCLL1 inclusive 1500 -350 300 **BBC 7Vertex** 250 triggered by 1000-NTC inclusive 200 150 500-100 BBC ZVertex 50 triggered by BBLL1 OR NTC. -30 40 5053 -20 nsec, from bucket center **BBC ZVertex** Nent = 2168 wcmProfile.vi Mean = -7.017File Edit Operate Windows Help 30 = n68.pbn.bnl.aov plot Z zoom Spacing # plots delta Y YELLOW **‡**|56 ≜0.00 ₫1.00 1075-800-600-400nHitPMT South: North Mean = 35.01 200-10 40 -40 -30 -20 -10 30 5053 nsec, from bucket center 11:25:56 PM 743.8 Cursor 01/18/2002 # Tria. msec Last trigger Scale acnsun68.pbn.bnl.gov Naohito



#### For even more Successful Run-3



- Better Performance (£&£) and Reproducibility
  - Diagnosis at each step is VERY important
    - Source -> 200 MeV -> Booster -> AGS injection -> AGS extraction -> RHIC injection -> RHIC flat top
  - Understand systematics of monitoring system
    - Redundant measurements
      - Multiple measurements at RHIC (cf. Emittance growth ? Scaping?)
      - E880 vs new AGS CNI Polarimeter
      - RHIC CNI Polarimeter and possible Local Polarimeters
- Commissioning of New Devices and re-commissioning of "OLD" Devices
  - Re-commissioning will also take sometime.
  - NEW
    - Spin Rotators and Local Polarimeters
  - OLD:
    - Snakes / Spin Flipper / Polarimeter
  - Source  $\rightarrow$  Linac  $\rightarrow$  Booster  $\rightarrow$  AGS  $\rightarrow$  AtR







#### Run 3 and Beyond



- Any Short Range Plan should be consistent with Long Range Plan
- Roadmap towards Full-Fledged RHIC Spin Operation
  - Absolute Polarization Calibration
    - Pol-J target
    - Better calibration at injection energy
    - Down ramp
  - Develop Robust Operation Phase space
    - Source → Linac → Booster → AGS → RHIC
    - Any additional device to achieve this goal?
      - "Strong" AGS Partial Snake
- How can we arrange these developments with minimal interference with Spin and HI PHYSICS program ?
- A series of RHIC Spin Collaboration Meetings are scheduled to develop the plan.







#### Summary



- The first polarized pp run was successful
- For further success
  - **■** We should improve
    - Exp-Exp and Exp-MCR Communications
  - We need
    - Better Luminosity and POLARIZATION
  - We would like to see
    - Reproducibility in Machine Performance
- Especially Polarized proton operation requires collaborative work by Experiment and Accelerator!



